

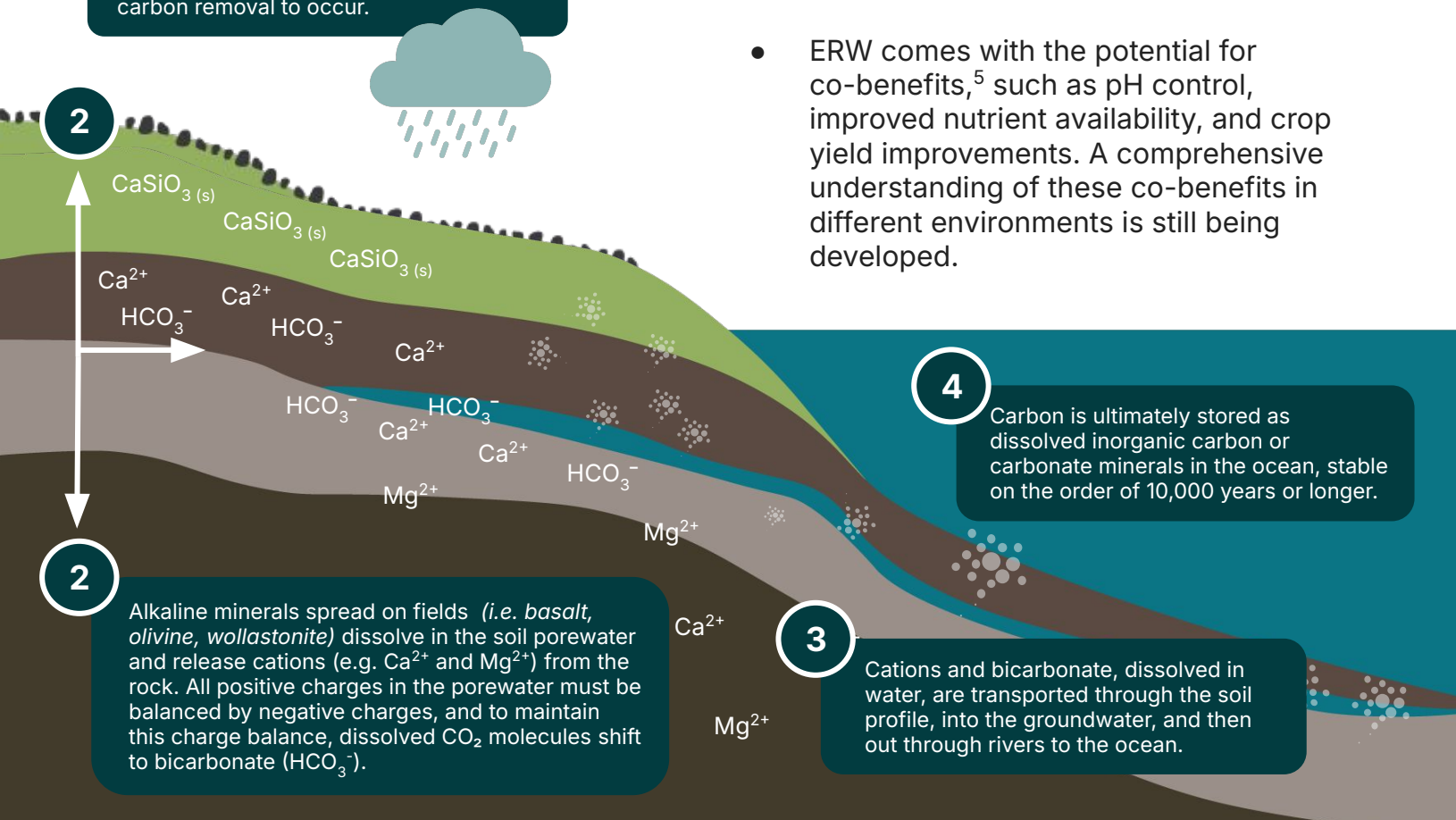
Enhanced Rock Weathering (ERW) on agricultural soils offers a promising pathway to gigaton-scale durable carbon removal via accelerated natural processes.

Currently, the Earth naturally removes ~1 gigaton of CO<sub>2</sub> per year via natural silicate weathering.<sup>1</sup> Managed ERW has the potential to remove another 1-4 gigatons of CO<sub>2</sub> per year.<sup>2,3,4</sup>

1

Rain falls onto agricultural soils, providing enough water for the reactions enabling carbon removal to occur.

2



2

Alkaline minerals spread on fields (*i.e.* basalt, olivine, wollastonite) dissolve in the soil porewater and release cations (e.g. Ca<sup>2+</sup> and Mg<sup>2+</sup>) from the rock. All positive charges in the porewater must be balanced by negative charges, and to maintain this charge balance, dissolved CO<sub>2</sub> molecules shift to bicarbonate (HCO<sub>3</sub><sup>-</sup>).

3

Cations and bicarbonate, dissolved in water, are transported through the soil profile, into the groundwater, and then out through rivers to the ocean.

4

Carbon is ultimately stored as dissolved inorganic carbon or carbonate minerals in the ocean, stable on the order of 10,000 years or longer.

- ERW does not require additional land use and builds on existing infrastructure (e.g., existing basalt quarries, supply chains), tools (e.g., agricultural spreaders), and practices (e.g., spreading aglime).
- Depending on how it is deployed, ERW may require less energy per ton of CDR compared to more engineered pathways. Main energy inputs come from the sourcing, grinding, transportation, and spreading of the rock.
- ERW comes with the potential for co-benefits,<sup>5</sup> such as pH control, improved nutrient availability, and crop yield improvements. A comprehensive understanding of these co-benefits in different environments is still being developed.